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Owner's Manual

SMARTONLINE™

Rack/Tower Mount Online UPS Systems

ESPAÑOL: p. 13

FRANÇAIS: p. 25

DEUTSCH: p. 37

Important Safety Instructions: *p. 2*

Installation: *p. 3 - 5*

Basic Operation: *p. 6 - 9*

Battery Replacement: *p. 10*

Storage & Service: *p. 11*

Specifications: *p. 11 - 12*

Important Safety Instructions



SAVE THESE INSTRUCTIONS

This manual contains important instructions and warnings that should be followed while installing, operating & storing all Tripp Lite UPS Systems.

UPS Location Warnings

- Install your UPS indoors, away from excess moisture or heat, conductive contaminants, dust or direct sunlight.
- For best performance, keep the indoor temperature between 32° F and 104° F (between 0° C and 40° C).
- Leave adequate space around all sides of the UPS for proper ventilation.

UPS Connection Warnings

- Connect your UPS to a properly grounded AC power outlet. Do not remove or modify the ground connector of your UPS's plug. Do not use two-prong adapters with the UPS's plug.
- Do not plug your UPS into itself; this will damage the UPS and void your warranty.
- If you are connecting your UPS to a motor-powered AC generator, the generator must provide clean, filtered computer-grade output.

Equipment Connection Warning

- Do not use Tripp Lite UPS Systems for life support applications in which a malfunction or failure of a Tripp Lite UPS System could cause failure or significantly alter the performance of a life-support device.

Battery Warnings

- Your UPS does not require routine maintenance. Do not open your UPS except to replace batteries. There are no user-serviceable parts inside.
- Battery replacement should be performed by qualified service personnel. Because the batteries present a risk of electrical shock and burn from high short-circuit current, service personnel should observe proper precautions. Use tools with insulated handles, remove all metal hand jewelry and when possible work with only one hand to reduce the danger of shock. Replace the existing batteries with an equal number of new batteries of the same type. Do not open the sealed lead-acid batteries. Do not short or bridge the battery terminals with any object.
- The UPS batteries are recyclable. Refer to local codes for disposal requirements or in the USA only call 1-800-SAV-LEAD (1-800-728-5323) for complete recycling information. Do not dispose of the batteries in a fire.
- The UPS contains its own energy source (battery). The output terminals may be live even when the UPS is not connected to an AC supply.
- Only connect Tripp Lite battery packs of the correct voltage to your UPS's external battery connectors.
- Do not connect or disconnect external battery packs while the UPS is operating from battery.
- Do not operate your UPS without batteries.

Installation

Mounting

Rackmount

1) Loosen the wingnuts on each of the two UPS Side Supports; adjust the length of the supports to match the depth of your rack; tighten wingnuts.

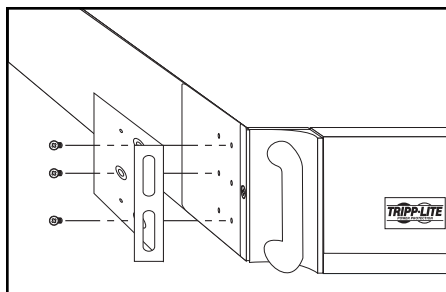
2) Mount both UPS Side Supports in your rack on the inside surfaces of the rack rails.

Note: Both support ledges should face inward. The side supports' front and back holes are threaded and do not require nuts to secure rack bolts.

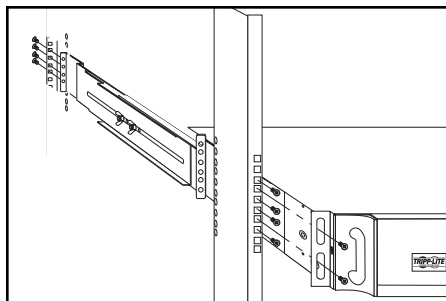
3) Attach mounting 'ears' to the front end of the UPS's sides using the screws provided.

4) Lift UPS and slide it onto the UPS Side Supports within your rack. Mount the UPS by screwing rack bolts through the UPS mounting 'ears', through the rack rails and through the UPS Side Supports.

Note: The side supports' front holes are threaded and do not require nuts to secure rack bolts.



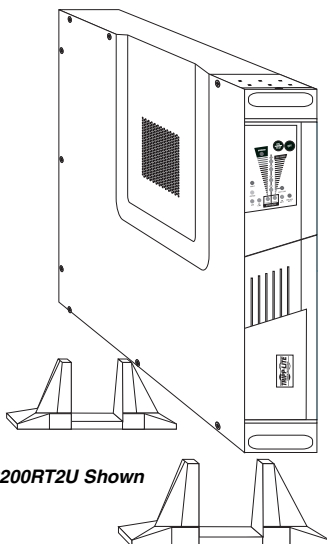
SU2200RT2U Shown



Vertical Tower Mount

1) Cover the rackmount screw holes on the UPS's sides with supplied snap-in hole-cover caps.

2) Place the UPS upright in a flat, stable location with its control panel on the high corner facing forward. Position stabilizer feet 4 in. from each end of the UPS.



SU2200RT2U Shown

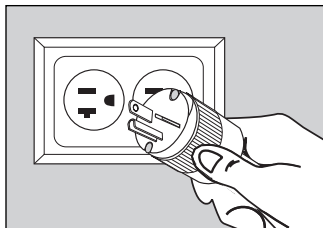
Connection & Start-Up

1 Plug your UPS's Line Cord into an electrical outlet.

If your model features a detachable line cord, first plug the female end into your UPS's AC Input Receptacle.

Your UPS must be connected to a dedicated circuit of sufficient amperage—check the “Recommended Utility Amps” rating of your model in the specifications. Note, however, that the select models may be fitted with different plug types. Refer to the “OP Rating/Plug Rating” chart printed on the top of your UPS.

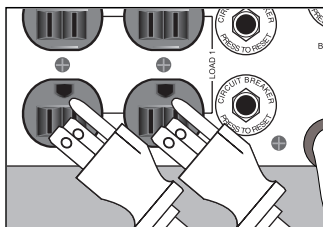
Once your UPS is plugged in, the fan and all Indicator Lights will turn ON. The “LINE” and “LOAD ACTIVE METER” LEDs will illuminate and the UPS will emit a beep to indicate normal operation. However, power is not supplied to your UPS's AC outlets until the UPS is turned on.



SU2200RT2U Plug (NEMA 5-20) Shown

2 Plug your equipment into your UPS.

Your UPS is designed to support computer equipment only. You will overload your UPS if you connect household appliances or laser printers to the UPS's outlets.

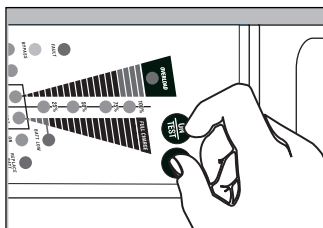


SU2200RT2U Shown

3 Turn your UPS ON:

- Press the “ON/TEST” Switch
- Hold it for several seconds until you hear a beep
- Release it

Your UPS will begin providing AC power to its outlets. The “ON LINE” LED will illuminate.

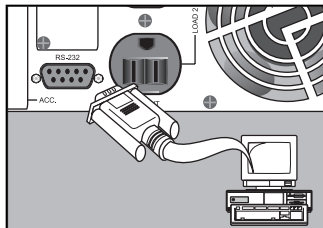


Optional Connections

Your UPS will function properly without these connections.

Serial Port Connection

Using the serial cable provided, connect a serial port on your computer to the serial port of your UPS. Install Tripp Lite's PowerAlert software (provided on CD) on the computer .

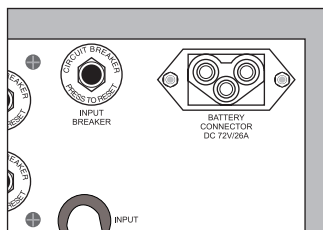


SU2200RT2U Shown

External Battery Pack Connection

Check to ensure that the external batteries you are connecting match the voltage listed on your UPS's battery connector. Plug either end of the battery connection cable (supplied with the battery pack) into the UPS's External Battery Connector and the other end into the Battery Output Connector on the rear panel of the external battery pack.

Since your UPS has internal batteries, external batteries are only needed to extend runtime. Adding external batteries will increase recharge time as well as runtime. Make sure that each end of the cable is fully inserted into its connector. Several small sparks may result during battery connection; this is normal.



SU2200RT2U Shown

Basic Operation

Front Panel Switches



“ON/TEST” Switch: This switch controls four separate UPS functions:

UPS Power ON

To turn the UPS on, press this switch, hold it for several seconds until you hear a beep, then release it. The “ON LINE” LED will illuminate.

UPS Self-Test

During normal on-line operation, press this switch and hold it until you hear a beep. This initiates a 10-second self-test of the battery. The UPS will shift to battery power (the “ON BATT” and “BATT ACTIVE METER” LEDs will illuminate) for ten seconds.

Alarm Silence

To silence the UPS “on-battery” alarm, press this switch and hold it until you hear a beep.

UPS Cold Start

To use your UPS as a stand-alone power source when AC power is unavailable (i.e. during a blackout), press this switch and hold it until you hear a beep. The UPS will then provide battery power to its outlets.*

* The “ON BATT” Indicator Light will be illuminated since your UPS will be operating from battery power.



“OFF” Switch: This switch turns power OFF at the UPS receptacles. Press this switch, hold it until you hear a beep, then release it. The UPS will continue charging and the fan will continue to cool internal components even after you turn the UPS receptacles off. To turn the UPS OFF completely, including the charger, disconnect the UPS’s power cord after pressing the “OFF” switch.

Front Panel Indicator Lights



“ON LINE” LED: This green light will illuminate constantly to indicate the UPS is performing normal on-line operation (filtering and resynthesizing incoming AC line voltage to provide pure sine wave output). When this light is illuminated, you can monitor the load level of your UPS on the “LOAD ACTIVE METER” LEDs.



“LINE” LED: This green light will illuminate constantly to indicate the utility supplied AC line voltage at your wall outlet is nominal. It will flash if the line voltage is outside the nominal range (either too low or too high). No action is required on your part when the LED flashes; the UPS continuously and automatically filters AC line power to provide your equipment with pure sine wave AC power, regardless of brownout or overvoltage conditions. If this light is off, then AC line voltage is not present (blackout) or is at an extremely high voltage, and the UPS will provide connected equipment with power from battery.

Front Panel Indicator Lights (Continued)



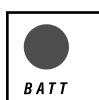
“BYPASS” LED: This yellow light will illuminate to indicate that the UPS’s DC/AC inverter is deactivated and the UPS is in the “Bypass” mode. During normal operation this LED will light briefly when the unit is plugged in, but if an internal fault occurs this light will illuminate constantly to show that connected equipment will receive filtered AC mains power, but will not receive battery power during a blackout. In this case, contact Tripp Lite for service.



“FAULT” LED (Select Models Only): This red light will flash when your UPS detects an internal fault (overheating, overvoltages, etc.) or when it detects a wiring fault in your wall outlet (reversed phases, missing ground, etc.) If the light persists after restarting the UPS, contact an electrician to check the AC line. Your UPS will identify the presence of most (but not all) wiring faults.



“LOAD ACTIVE METER” LED: This green light will illuminate when your UPS is receiving AC power to indicate that the set of four dual-function LEDs is displaying the load level of your UPS.



“BATT ACTIVE METER” LED: This green light will illuminate when your UPS is operating from battery power to indicate that the set of four dual-function LEDs is displaying the battery charge level of your UPS. Note: the “ON BATT” LED will also be illuminated.



“OVERLOAD” LED: This red light will illuminate constantly to indicate that your UPS’s capacity has been exceeded while it is in on-line operation. The UPS alarm will beep continuously. Immediately remove overload until light and alarm goes off. If you do not immediately remove the overload, the UPS will transfer from on-line to bypass operation.



“BATT LOW” LED: This yellow light will illuminate when your UPS’s battery charge level is low. The UPS alarm will beep until either the battery charge is depleted or the batteries are adequately recharged.



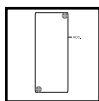
“ON BATT” LED: This green light will illuminate constantly to indicate that AC line voltage is not present and your UPS is providing your equipment with battery power. The UPS will also beep every two seconds, unless silenced by the “ON/TEST” Switch. When this light is illuminated, you can monitor the battery charge level of your UPS on the “BATT ACTIVE METER” LEDs.



“REPLACE BATT” LED: This red light will illuminate constantly and the UPS alarm will sound three beeps* if your UPS’s microprocessor detects a battery fault or if your UPS fails the automatic self-test (after you turn your UPS ON) and the UPS battery is less than fully charged. Turn the UPS OFF and let it charge for 12 hours and turn it back ON to perform a second self test. If the light continues to stay on, contact Tripp Lite for service.

**After the initial alarm, the UPS will beep once every hour until the problem is corrected.*

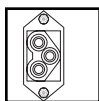
Rear Panel



Accessory Slot: Remove the small cover panel from this slot to use optional accessories to remotely monitor and control your UPS. Contact Tripp Lite Customer Support at (773) 869-1234 for more information, including a list of available SNMP, network management and connectivity products.



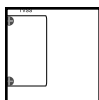
“SMART” Serial Port: This serial port connects your UPS to any workstation or server. Use with Tripp Lite software and cabling to monitor and manage network power and automatically save open files and shut down equipment during a blackout. The port uses RS-232 communications to transmit UPS and power conditions. Contact Tripp Lite Customer Support at (773) 869-1234 for more information, including a list of available SNMP, network management and connectivity products.



External Battery Pack Connector: Use to connect optional Tripp Lite Battery Packs for additional runtime. Contact Tripp Lite Customer Support at (773) 869-1234 for the appropriate Tripp Lite battery pack to connect. Refer to instructions available with the Battery Pack for complete connection information and safety warnings.



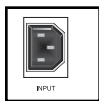
Fan: The fan cools the UPS's internal components. It is always on when line power is present.



TVSS Cover Plate (Reserved for future use): Optional modem/network surge protection modules may be available for purchase by special arrangement with Tripp Lite.



Input Circuit Breaker Switch: This resettable breaker prevents high input current from damaging the UPS or the attached load. If this breaker trips, make sure your UPS is connected to AC power of the proper voltage before resetting the circuit breaker by pushing the breaker switch in.



Input Receptacle (Select Models Only): Connect one end of the detachable line cord into this receptacle and the other into your wall outlet.

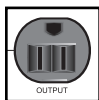
Rear Panel (Continued)



Output Circuit Breakers Switches (Select Models Only): These resettable circuit breakers protect your UPS from output overload. If one or both breakers trip, remove some of the load on the circuit(s) and allow the UPS to cool before pressing the breaker switch(es) in to reset.



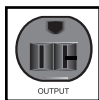
Input Cord (Select Models Only): This permanently attached power cord connects your UPS to a power outlet.



NEMA 5-15R

AC Receptacles (NEMA 5-15R) (Varied by Model):

These 15-, 20- and 30-amp receptacles provide your connected equipment with pure sine-wave AC output from the AC line during normal operation and from battery power during blackouts and severe brownouts. Power provided at these outlets is filtered to protect connected equipment against damaging surges and line noise.



NEMA 5-15/20R

The receptacles are divided into numbered load banks, as labelled on the unit. Using PowerAlert software and cabling, load banks one and two may be individually turned off and on from a remote location, allowing users to reset or reboot connected equipment. See Serial Port Connection under Optional Connections.

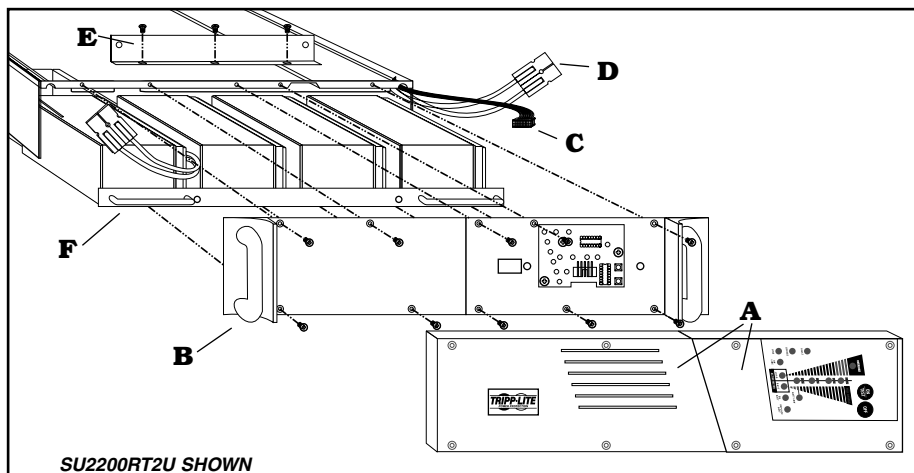
Battery Replacement

Under normal conditions, the original battery in your UPS will last several years. Contact Tripp Lite for information about replacement batteries.

Battery replacement should be performed only by qualified service personnel. The batteries are hot-swappable: it is not necessary to turn off or disconnect the UPS and its connected load to replace the UPS's batteries. However, when it is convenient to do so, service personnel may simplify the replacement procedure by pressing the OFF switch to turn power off at the UPS outlets and disconnecting the UPS's power cord from the wall outlet.

When replacing the batteries, qualified service personnel should refer to "Battery Warnings" in the Safety section and follow this procedure:

- 1)** Place the UPS horizontal with the Control Panel on the right side.
- 2)** Remove both snap-on cover panels (A).
- 3)** Unscrew and remove rack handle plates (B) on either side of the UPS.
- 4)** Disconnect the microprocessor circuit board plug (C) located on the right side of the UPS.
- 5)** Disconnect battery connectors (D). Note: while batteries are disconnected, the UPS will not provide battery backup.
- 6)** Unscrew and remove the battery retaining bracket (E).
- 7)** Grasp pull-tab and pull out sliding battery tray (F). **WARNING!** On the SU2200RT2U, the batteries are arranged in an "L" shape on the tray. Since the tray is heaviest on the front and on the left, provide adequate support to keep the tray from tipping.
- 8)** Make a detailed sketch of the batteries and the polarity, color and connection of all cables. Disconnect used batteries and dispose of them properly. Connect replacement batteries in exactly the way original batteries were connected. Reassemble the UPS by reversing steps 1-7. Note: you may not receive full runtime until your replacement batteries have fully charged. Small sparks arcing between battery connectors during battery replacement are normal.



Storage & Service

Storage

First turn your UPS OFF; press the “OFF” switch to turn power off at the UPS outlets, then disconnect the power cord from the wall outlet. Next, disconnect all equipment to avoid battery drain. If you plan on storing your UPS for an extended period of time, fully recharge the UPS batteries once every three months by plugging the UPS into a live AC outlet and letting the UPS charge for 4-6 hours. If you leave your UPS batteries discharged for an extended period of time, they may suffer permanent loss of capacity.

Service

If returning your UPS to Tripp Lite, please carefully pack the UPS using the ORIGINAL PACKING MATERIAL that came with the unit. Enclose a letter describing the symptoms of the problem. If the UPS is within the 2 year warranty period, enclose a copy of your sales receipt.

Specifications

All Models: Input Frequency (50/60 Hz Auto-Selecting); Output Waveform in Line and Battery Modes (Pure Sine Wave); Transfer Time: (0 ns.); Maximum Harmonic Distortion with Linear Load ($\leq 3\%$); Maximum Harmonic Distortion with Nonlinear Load ($\leq 6\%$); Battery Recharge Time to 80% Capacity (2-4 hours).

Model	SU1000RT2U	SU1000RT2UHV
Input Voltage:	120V	200/208/240V
Input Breaker Rating:	15A	8A
Input Plug Type:	5-15P	6-15P
Recommended Utility Amps:	15A	15A
Output Capacity (VA/Watts):	1000/800	1000/800
Battery Runtime (Half Load/Full Load) Min.:	18/6	18/6
System Battery Voltage:	36 VDC	36 VDC
Approvals:	UL, cUL, FCC, NOM	UL, cUL, FCC, NOM

Model	SU1000RT2U	SU2200RT2U
Input Voltage:	220/230/240V	120V
Input Breaker Rating:	8A	30A
Input Plug Type:	IEC 320-C14	5-20P
Recommended Utility Amps:	10A	20A
Output Capacity (VA/Watts):	1000/800	2200/1600
Battery Runtime (Half Load/Full Load) Min.:	18/6	18/6
System Battery Voltage:	36 VDC	72 VDC
Approvals:	CE	UL, cUL, FCC, NOM

Model	SU2200RT2UHV	SU1000RT2U
Input Voltage:	200/208/240V	220/230/240V
Input Breaker Rating:	15A	15A
Input Plug Type:	6-20P	IEC 320-C20
Recommended Utility Amps:	20A	20A
Output Capacity (VA/Watts):	2200/1600	2200/1600
Battery Runtime (Half Load/Full Load) Min.:	18/6	18/6
System Battery Voltage:	48 VDC	48 VDC
Approvals:	UL, cUL, FCC, NOM	CE

Specifications (Continued)

Model	SU3000RT3U	SU3000RT3UHV
Input Voltage:	120V	200/208/240V
Input Breaker Rating:	40A	25A
Input Plug Type:	L5-30P	L6-20P
Recommended Utility Amps:	30A	20A
Output Capacity (VA/Watts):	3000/2400	3000/2400
Battery Runtime (Half Load/Full Load) Min.:	14/6	14/6
System Battery Voltage:	72 VDC	72 VDC
Approvals:	UL, cUL, FCC, NOM	UL, cUL, FCC, NOM

Model	SUIN3000RT3U
Input Voltage:	220/230/240V
Input Breaker Rating:	25A
Input Plug Type:	IEC 320-C20
Recommended Utility Amps:	20A
Output Capacity (VA/Watts):	3000/2400
Battery Runtime (Half Load/Full Load) Min.:	14/6
System Battery Voltage:	72 VDC
Approvals:	CE

FCC Specifications for Models with FCC Approval: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause